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### REMARKS

The present response is intended to be fully responsive to all points of objection and/or rejection raised by the Examiner and is believed to place the application in condition for allowance. Favorable reconsideration and allowance of the application is respectfully requested.

Applicants assert that the present invention is new, non-obvious and useful. Prompt consideration and allowance of the claims is respectfully requested.

### Status of Claims

Claims 1-40 remain pending in the application. Claims 1, 13, 20-21, 23, 25-29, and 31-34 have been amended to more clearly define the subject matter claimed by the present Application. Applicants respectfully assert that the amendments to the claims add no new matter.

### CLAIM REJECTIONS

#### 35 U.S.C. § 102 Rejections

In the Office Action, the Examiner rejected claims 1-6, 10-16, 18-25, 28-32, 34-37 and 39-40 under 35 U.S.C. § 102(b), as being anticipated by publication No. 2002/0165626 to Hammons, JR. et al. (hereinafter "Hammons").

Applicants respectfully traverse the rejections of claims 1-6, 10-16, 18-25, 28-32, 34-37 and 39-40 in view of the remarks that follow.

Applicants' independent claims 1, 13 and 34 as amended include, *inter alia*, "a frequency-multiplexing modem implementing a frequency-multiplexing modulation method; a spatial-multiplexing modem implementing a spatial -multiplexing modulation method; and a controller to select said frequency-multiplexing modem or said spatial-multiplexing modem to modulate a data-frame of a signal to be transmitted via one or more of said antennas, based on a predetermined criterion".

Applicants' independent claims 20 and 28 as amended include, *inter alia*, "selecting (by a controller) to modulate a data frame of a signal using either a frequency-multiplexing modulation method, implemented by a frequency-multiplexing modem, or a

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spatial-multiplexing modulation method, implemented by a frequency-multiplexing modem, based on a predetermined criterion".

Applicants respectfully submit that Hammons does not teach or suggest, at least the above cited elements of claims 1, 13, 20, 28 and 34. In order for a reference to anticipate a claim under 35 U.S.C. 102(b), the reference must teach every element of the claim.

Hammons discloses at paragraph [0029]

"Two design approaches with different complexity-versus-diversity advantage trade-offs are considered. The first approach (referred to as "single carrier time domain design" approach or STC (space-time coding)), which is more fully described below in FIG. 3A, uses space-time coding and maximum likelihood (ML) decoding to exploit the multipath nature of the channel. The second approach utilizes an orthogonal frequency division multiplexing (OFDM) technique to transform the multi-path channel into a block fading channel (referred to as "OFDM based design" approach or SFC (space-frequency coding)); this approach is detailed in the discussion of FIG. 3B. "

Hammons further discloses at paragraph [0030]

"The two approaches, according to the present invention, differ in terms of decoder complexity, maximum achievable diversity advantage, and simulated frame error rate performance. The first approach requires relatively greater complexity at the receiver 105 over the second approach, in that the first approach combines algebraic space-time coding with maximum likelihood decoding to achieve the maximum possible diversity advantage in MIMO frequency selective channels to achieve the diversity advantage. As a result, this first approach has a relatively large trellis complexity, as required by the maximum likelihood receiver 105. The second approach utilizes an orthogonal frequency division multiplexing (OFDM) front-end to transform an intersymbol-interference (ISI) fading channel into a flat block fading channel" (emphasis added).

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Applicants respectfully assert that Hammons describes implementing only one approach of the two approaches at a receiver as described at paragraph 0066: "If receiver complexity presents an issue, which is conceivable in certain applications, then a second design approach may be implemented."

Hammons is silent, however, in general as to selecting between two different modems, each implementing a different modulation method at a single apparatus and in particular as to "a frequency-multiplexing modem implementing a frequency-multiplexing modulation method; a spatial-multiplexing modem implementing a spatial-multiplexing modulation method; and a controller to select said frequency-multiplexing modem or said spatial-multiplexing modem", as recited by claims 1, 13 and 20, and "selecting by a controller to modulate a data frame of a signal using either a frequency-multiplexing modulation method, implemented by a frequency-multiplexing modem, or a spatial-multiplexing modulation method, implemented by a frequency-multiplexing modem, based on a predetermined criterion" as recited by claims 28 and 34.

Applicants therefore assert that independent claims 1, 13, 20, 28 and 34 are allowable over Hammons. Each of dependent claims 2-6, 10-12, 14-16, 18-19, 21-25, 29-32, 35-37 and 39-40 depends, directly or indirectly, from one of independent claims 1, 13, 20, 28 and 34, and includes all the features of the claim from which it depends as well as additional distinguishing features, and is therefore allowable. Therefore, Applicants respectfully request that the Examiner withdraw the rejection of claims 1-6, 10-16, 18-25, 34-37 and 39-40 under 35 U.S.C. § 102(b).

### 35 U.S.C. § 103 Rejections

In the Office Action, the Examiner rejected claims 7-9, 17, 26-27, 33 and 38 under 35 U.S.C. §103(a) as being unpatentable over Hammons in view of US 6,498,788 to Emilsson et al. (hereinafter "Emilsson").

As discussed above, amended independent claims 1, 13, 20, 28 and 34 are patentable over Hammons. Emilsson does not cure the deficiencies of Hammons. Each of dependent claims 7-9, 17, 26-27, 33 and 38 depends, directly or indirectly, from one of independent

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claims 1, 13, 20, 28 and 34, and includes all the features of the claim from which it depends as well as additional distinguishing features, and is therefore allowable.

In view of the above, Applicants respectfully request that the rejections under 35 U.S.C. §103(a) of dependent claims 7-9, 17, 26-27, 33 and 38 be withdrawn.

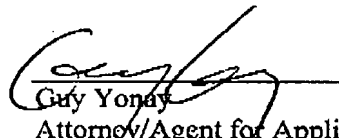
### CONCLUSION

In view of the foregoing amendments and remarks, the pending claims are deemed to be allowable. Their favorable reconsideration and allowance is respectfully requested.

Should the Examiner have any question or comment as to the form, content or entry of this Amendment, the Examiner is requested to contact the undersigned at the telephone number below. Similarly, if there are any further issues yet to be resolved to advance the prosecution of this application to issue, the Examiner is requested to telephone the undersigned counsel.

No fees are believed to be due associated with this paper. However, if any such fees are due, please charge such fees to deposit account No. 50-3355.

Respectfully submitted,



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